

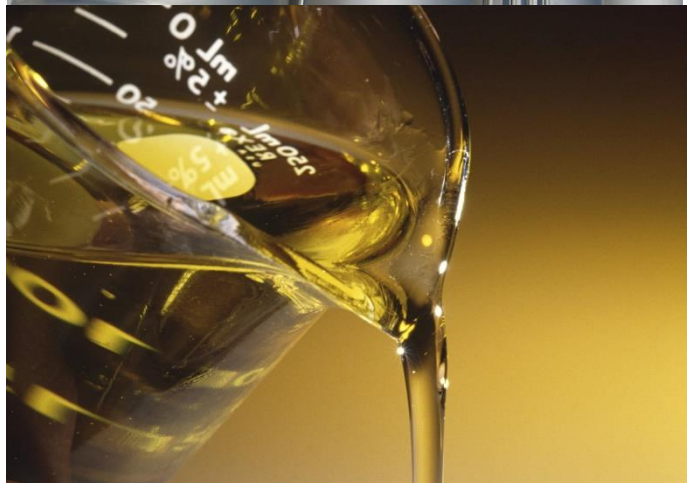


## News Review

Issue Sixty-One

April 2017

**Each month we review the latest news and select key announcements and commentary from across the biofuels sector.**



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# Foreword

Welcome all to April's final free News Review, covering all things Biofuels.

The spotlight is once again on the European Parliament this month, as they continue their pursuit of a more sustainable and environmentally friendly Europe. The Parliament has voted in favour of phasing out vegetable oil from Biofuels. This comes after recognition that nearly 50% of the EU's palm oil consumption is for biofuels production, and if biofuels are to become a sustainable alternative to petroleum based fuels, palm oil is not a sustainable feedstock, with serious concerns about the environmental impacts of its cultivation – particularly with regards to deforestation.

The motion had been described as “controversial”, but was overwhelmingly voted through by the Parliament, paving the way for the European Commission to table legislation. The expectation is that standards will be set for the sustainability of palm oil used in the EU, which will of course have a large effect on EU biofuel production. How this manifests itself in policy will no doubt emerge over the coming months.

Elsewhere, focus is on shipping fuels, as the International Organisation for Standardisation have introduced new standards allowing for greater proportions of biofuel to be used in shipping fuels. This comes alongside news that the European Parliament wants to include shipping emissions in the European Emissions Trading Scheme, which would see caps introduced on shipping emissions and shipping companies needing to purchase allowances. This is not yet set in stone, but this has been threatened if the International Maritime Organisation does not introduce their own legislation to cover shipping emissions by 2021. The IMO is not best pleased, but the problem won't be going away soon, so it will be interesting to see what kind of an agreement is reached.

Read on for the latest market news.

# Policy

## Palm oil to be phased out of Biofuels?



*Flickr*

To counter the impact of unsustainable palm oil production, such as deforestation and habitat degradation, particularly in South-East Asia, the EU should introduce a single certification scheme for palm oil entering the EU market and phase out the use of vegetable oils that drive deforestation by 2020, say MEPs in a resolution voted on Tuesday.

The resolution was approved by 640 votes to 18, with 28 abstentions.

MEPs note that 46% of the palm oil imported by the EU is used to produce biofuels, requiring the use of about one million hectares of tropical soils.

They call on the Commission to take measures to phase out the use of vegetable oils that drive deforestation, including palm oil, as a component of biofuels, preferably by 2020.

MEPs note that various voluntary certification schemes promote the sustainable cultivation of palm oil. However, their standards are open to criticism and are confusing for consumers, they say. They advocate a single certification scheme to guarantee that only sustainably produced palm oil enters the EU market.

They also call on the EU to introduce sustainability criteria for palm oil and products containing palm

oil entering the EU market. The Commission should improve the traceability of palm oil imported into the EU and should consider applying different customs duty schemes that reflect real costs more accurately until the single certification scheme takes effect.

MEPs also stress that a large part of the global production of palm oil is in breach of fundamental human rights and adequate social standards. It frequently uses child labour, and there are many land conflicts between local and indigenous communities and palm oil concession holders.

Click [here](#) for more information.

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## US tables anti-dumping duty on Argentinian and Indonesian biofuels

AHDB reports that The US National Biodiesel Board (NBB) has petitioned the government to impose anti-dumping duties on biodiesel imports from Argentina and Indonesia. The trade group claims that cheaper biodiesel imports from these countries has undercut domestic producers and taken their market share.

In 2015 and 2016, imports from Argentina and Indonesia comprised 76% and 79% of total US biodiesel imports respectively. Since 2014, the amount of biodiesel imported from these countries has more than quadrupled.

The NBB's request comes at a time when there is already uncertainty around US biofuel policy. If anti-dumping duties are applied, domestic biodiesel output could receive a boost and increase demand for soya oil (the main vegetable oil used in US biodiesel production). The executive director of the Indonesian Vegetable Oil Refiners Association has stated that if the duties are enforced, there could be a "significant drop" in Indonesia's biodiesel exports.

Click [here](#) for more information.

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## UNICA spokesperson discusses California Low Carbon Fuels Standard



*Brazilian Sugarcane Industry Association*

California's Low Carbon Fuel Standard, America's second-largest driver of biofuels consumption after the federal Renewable Fuels Standard, could soon dramatically increase demand for low-carbon fuels under a proposed state-wide decarbonization plan. The California Air Resources Board's proposed scoping plan to reduce greenhouse gas emissions 40 percent below 1990 levels by 2030 sets one of the most ambitious targets in North America.

Under the LCFS, fuel producers are required to reduce the carbon intensity (CI) of their products 10 percent from a 1990 baseline by 2020, reducing petroleum dependency and reducing emissions and other air pollutants.

CI evaluates greenhouse gas emissions from producing and consuming fuel, measured in carbon dioxide equivalents, and is based on a complete lifecycle analysis including the direct effects of fuel use and production and the indirect effects associated with crop-based biofuels.

Under the proposed scoping plan update, California's transportation fuel CI would become much more stringent. One alternative proposal would increase the LCFS target to an 18 percent CI reduction by 2030, which CARB says would avoid between \$55 million and \$340 million in economic damages related to climate change.

The new demand for advanced biofuels is potentially 400 million gallons. In the initial scoping plan discussion draft, released in December, CARB's 18 percent CI scenario assumes

an LCFS credit price of \$80 per ton in 2030 and 980 million gallons of advanced biofuels in the transportation sector, including cellulosic ethanol. These assumptions are significantly higher than the 10 percent scenario, which assumes an LCFS credit price of \$10 per ton in 2030 and 580 million gallons of advanced biofuels in the transportation sector, including cellulosic ethanol. The final 2017 scoping plan update wasn't released until late March and won't be considered by CARB until late April.

Click [here](#) for more information.

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## Risk from shipping carbon emissions big threat

With many in the shipping industry looking at ways to cut their sulphur emissions ahead of tighter limits being introduced in 2020, others are already looking at carbon as another problem that will face them in the coming years.

The European Parliament voted last month to include shipping in the European emissions trading scheme (ETS) as of 2023 if the International Maritime Organization (IMO) does not have a comparable system operating by 2021.

The vote was not binding, but indicated what the parliament will push for in negotiations with the EU's national governments on changes to the ETS.

The IMO has criticized European moves to include shipping in the ETS, saying they could threaten its work on developing a global approach to cutting carbon emissions.

Reducing carbon dioxide emissions from marine fuels will be a more difficult proposition than cutting pollution from sulphur and other unwanted chemicals.

While sulphur can be removed from fuel oil either at the refinery or directly from a vessel's emissions with scrubbers, it is less obvious how to reduce carbon dioxide output. Methods like using vessels more efficiently will need to be considered as well as finding cleaner fuels.



Container shipping company Maersk Line is targeting a 60% reduction from 2007 levels in carbon dioxide emissions per container carried by 2020, and had managed a 42% drop by the end of last year.

Increasing average vessel sizes as well as vessel sharing agreements with other companies have helped the Danish firm in this.

Increased use of biofuels by the shipping industry may also help it to reduce its carbon footprint.

This month the Port of Amsterdam announced its fleet of five patrol vessels will use a blended product containing 30% biodiesel, with carbon dioxide emissions savings of 25% versus traditional marine diesel oil.

In an interview with S&P Global Platts in December, GoodFuels forecast that marine biofuels could take up 5-10% of global bunker fuel demand by 2030.

For now, it seems unlikely that the majority of shipowners will start to address carbon emissions until the regulatory environment for them and other pollution is clearer.

There will be advantages for some early adopters in terms of their public relations and relationships with regulators, but for most the time to change practices will not come until both the law, and the best choice of fuel, are clear.

Click [here](#) for more information.

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## Greater biofuel content in new shipping fuel standards



*Pixabay*

The International Organisation for Standardisation has launched a new class of marine fuel specifications to provide standards for higher quantities of biofuels to be blended into marine distillates, and making reporting of cloud point mandatory in their updated marine gasoil grades.

No changes have been made to residual fuel oil standards in the latest edition of ISO 8217, the global standard for marine fuels, that was last updated five years ago.

In the newly defined "class F" grades, up to 7% fatty acid methyl ester (FAME) is allowed, a biodiesel which has several similar physical properties to conventional diesel, but is non-toxic and biodegradable.

This higher percentage will allow 10 ppm sulphur automotive diesel to be blended into the marine distillates pool, says Monique Vermeire, fuels technologist at Chevron, but speaking to S&P Global Platts in her capacity as convenor at the working group on ISO 8216/8217.

Biodiesel can make up to 7% of the blend in transport fuels in Europe currently as per EN 590.

The existing DMA specifications have also become more lenient to biodiesel, increased to 0.50% percentage weight in 8217: 2017 specs, from a 0.10% suggested level in the previous iteration five years ago.

Click [here](#) for more information.

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# Markets

## Massive growth forecast for Advanced Biofuels market

Technavio's market research analyst predicts that the global advanced biofuel market will grow at a CAGR of nearly 44% during the forecast period. The growing requirement for cleaner fuel is one of the primary drivers of the market growth. The need for alternate fuels is fast growing owing to rising fuel prices, energy security, and constant increase in emission levels. The R&D initiatives on the biofuels have led to the gradual increase in its utilization globally and are heading toward commercialization due to their performances being similar to gasoline and diesel. Moreover, with slight or no alterations required to the engine, the use of blended fuels in vehicles is rising high, and these fuels also emit lower greenhouse gases compared to conventional fuels dependent on the combination. Such benefits will accelerate the demand for advanced biofuels over the next four years.

One of the latest trends that will gain traction in the global advanced biofuel market is the rising investments in biofuels. The increasing prices of ordinary fuels have led to the development of advanced biofuels with increasing investments from private organizations. Moreover, support from the governments in the form of exclusive loans and grants will also attract other players to enter the market which will again contribute to its growth.

The global advanced biofuel market is largely competitive and dominated by key vendors. The market comprises of numerous key players with regional and local players, and there are a significant number of small players who account for substantial number of shares. The competition between the vendors is based on innovations, price, and quality of the product and the key

advanced biofuel companies are concentrating on new product development to stay unique with their product offerings.

Click [here](#) for more information.

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## Green Investment Bank acquired by Macquarie

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# Green Investment Bank

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*Green Investment Bank*

A Macquarie-led consortium, comprising Macquarie Group Limited (Macquarie), Macquarie European Infrastructure Fund 5 (MEIF5) and Universities Superannuation Scheme (USS), has agreed to acquire the UK Green Investment Bank plc (Green Investment Bank) from HM Government for £2.3 billion.

The Green Investment Bank will become Macquarie's platform for principal investments in green infrastructure projects in the UK and Europe. As a substantial investor in the UK's renewable energy sector in its own right, Macquarie will integrate its existing UK green energy principal investing business into the Green Investment Bank.

The Green Investment Bank platform, brand and Edinburgh office will be maintained with a substantial staff presence in the city. The business will be led by senior Green Investment Bank executives, supported by key existing functions.

Macquarie is committed to the Green Investment Bank's newly established target of £3 billion of new investment in green energy projects over the

next three years, either directly or by arranging capital from other investors. Subject to the availability of suitable opportunities, anticipated investments will span energy efficiency, bioenergy, energy from waste, onshore and offshore wind, solar and tidal energy and energy storage. The Green Investment Bank will target investments in both equity and debt and at all project stages including development, construction and operation.

Under Macquarie's custodianship, the Green Investment Bank will operate in accordance with its green purpose and green objectives and in line with the 'special share' arrangements. This will include publishing an annual report on its green performance, holding an annual industry day for stakeholders and green reporting.

The Green Investment Bank will build on an unrivalled track record of investing in UK green infrastructure. Together, the Green Investment Bank and Macquarie have led a combined £15 billion of investment in the UK low carbon economy during the past five years. This includes investments in projects representing more than 60 per cent of the UK's offshore wind generation capacity, 50 waste and bioenergy projects, and 1.8GW of solar projects. Macquarie is currently also advising on 850MW of tidal projects under development.

Click [here](#) for more information.

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# Research & Development

## **Sugarcane capable of producing both biodiesel and bioethanol**



*Wikimedia Commons*

Biodiesel production in the U.S. from vegetable oils has increased substantially during the past decade. However, its further increase is limited by the low amounts of oil produced per hectare from temperate oilseed crops. Recently novel transgenic sugarcane has been developed to accumulate both sugars and lipids in stems, making it a promising dual-purpose feedstock to produce both ethanol and biodiesel. In this study, two lines of the transgenic lipid producing sugarcane (lipid-cane) and the non-transformed sugarcane were characterized and processed. The total lipid concentrations were 0.7%, 0.9% and 1.3% for the non-transformed sugarcane and lipid-cane lines 19B and 25 C, respectively. Lipid composition analysis showed that about 31–33% of the total lipids were triacylglycerols, main feedstock for biodiesel production, for the lipid-cane samples, while this value was only 5% for the non-transformed sugarcane. By processing the sugarcane stems with a juicer, about 90% of the sugars and 60% of the lipids were extracted with juice. The extracted sugars in juice were fermented to ethanol and the lipids were later recovered



from the fermented juice using organic solvents. The recovered lipids from the fermented juice were 0.3, 0.5 and 0.8 g/100 g dry stem for the non-transformed sugarcane and lipid-cane lines 19B and 25 C, respectively. This study proved the concept of the lipid and sugar coproduction from the novel lipid-cane, which have a potential to make a large-scale replacement of fossil derived fuel without unrealistic demands on land area.

Click [here](#) for more information.

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### The secret to efficient algal biofuel production?



*Wikimedia Commons*

Biodiesel production using microalgae would play a pivotal role in satisfying future global energy demands. Understanding of lipid metabolism in microalgae is important to isolate oleaginous strain capable of overproducing lipids. It has been reported that reducing starch biosynthesis can enhance lipid accumulation. However, the metabolic mechanism controlling carbon partitioning from starch to lipids in microalgae remains unclear, thus complicating the genetic engineering of algal strains. We here used “dynamic” metabolic profiling and essential transcription analysis of the oleaginous green alga *Chlamydomonas* sp. JSC4 for the first time to demonstrate the switching mechanisms from starch to lipid synthesis using salinity as a regulator, and identified the metabolic rate-limiting step for enhancing lipid accumulation (e.g., pyruvate-to-acetyl-CoA). These results,

showing salinity-induced starch-to-lipid biosynthesis, will help increase our understanding of dynamic carbon partitioning in oleaginous microalgae. Moreover, we successfully determined the changes of several key lipid-synthesis-related genes (e.g., acetyl-CoA carboxylase, pyruvate decarboxylase, acetaldehyde dehydrogenase, acetyl-CoA synthetase and pyruvate ferredoxin oxidoreductase) and starch-degradation related genes (e.g., starch phosphorylases), which could provide a breakthrough in the marine microalgal production of biodiesel.

Click [here](#) for more information.

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### Enerkem's waste-to-biofuel plant hits all operational targets

Enerkem Inc., a world leading waste-to-biofuels and chemicals producer, announced today that its first full-scale commercial facility, located in Edmonton, Alberta, has met all operational milestones set by its senior lender Integrated Asset Management (IAM).

In less than five minutes, Enerkem's technology turns household waste into 99.9 per cent pure liquid chemicals and biofuels. Since the start of production, the Enerkem Alberta Biofuels facility has been meeting the highest quality standards set by the International Methanol Producers and Consumers Association (IMPCA) for the production and sale of methanol. Last year, Enerkem's biorefinery also became the first ISCC certified plant (International Sustainability and Carbon Certification) in the world to convert municipal solid waste into biomethanol.

This pioneering facility has been financed by private sources and received funding support from Sustainable Development Technology Canada (SDTC), Alberta Innovates and Alberta Energy.

Click [here](#) for more information.

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# Bioethanol

## Australia's first Waste to Ethanol plant commissioned

Greenbelt Resources Corporation, an innovator of sustainable energy production systems, announced today that it has commissioned the first waste-to-ethanol system for Standard Ethanol Pty. Ltd., an Australian company, that intends to deliver end-to-end, commercial-scale advanced biofuel systems to the Australian market. This important milestone demonstrates the ability of Greenbelt's commercial-scale technology and design integration to produce fertilizer, animal feed and over 0.5 million gallons per year of fuel-grade ethanol from waste wheat screenings.

The modular automated system designed by Greenbelt for Standard Ethanol, is based on Greenbelt's standard technology platform. Features of the system include: proprietary distillation and dehydration modules and plant-wide implementation of Greenbelt's proprietary automated process controls built on top of its central control platform. The system recycles wheat enabling it to gain added value from lower grades of wheat, while achieving a measure of local energy independence – further proving that converting waste to bio-products is a profitable endeavour.

Click [here](#) for more information.

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# Biodiesel

## Electric/Biofuel Hybrid Trucks to be trialled in Sweden



*DSV*

Logistics group and road haulage operator DSV is currently testing a unique Atego Hybrid truck from Mercedes-Benz in its Malmo city distribution operation. The truck runs on both electricity and the new Hydrotreated Vegetable Oil (HVO) 100 fuel. After a six-month test period in Malmo city traffic, the project will be evaluated. The results will help determine if electric hybrids can become long-term solutions to distribution in metropolitan areas, which are especially vulnerable to air pollution.

HVO is an advanced renewable biomass in the form of 100% synthetic diesel. Contrary to what the name implies, a large part of the Swedish HVO 100 is produced using slaughterhouse (animal) waste in addition to vegetable oils. HVO 100 may reduce Carbon Dioxide emissions by up to 90%. Other emissions (CO/HC/NOx and particulates) is 20-60% lower compared to regular diesel.

Click [here](#) for more information.

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# Other Fuels

## Carrefour deploys first biomethane service station



*Carrefour*

Carrefour has just kicked off roll-out of its bioNGV service stations – so it can expand its fleet of vehicles running on biomethane. Its aim before the end of 2017 is to have 9 service stations so that 200 lorries can make clean, silent deliveries to 250 urban stores in Paris, Marseille, Lyon, Bordeaux and Lille. The first of these service stations to open (in the Ile-de-France region) is the result of a partnership with Air Liquide.

To meet its aim of having 200 lorries running on biomethane by the end of 2017, Carrefour has entered into listing agreements with its energy partners to open nine bioNGV service stations across the country. The opening of the Servon service station (in the Seine-et-Marne département) near the Brie-Comte-Robert logistics hub is the first stage of this ambitious initiative aimed at delivering goods to France's major urban areas.

Lorries running on this type of biofuel have excellent environmental performance: a 75% reduction in CO<sub>2</sub> emissions, no fine-particle emissions and a 50% reduction in noise pollution.

Biomethane is part of the circular economy model: some of the biowaste collected from stores can be recycled at local level. By making use of a product that cannot be moved to another location, Carrefour is using an energy that helps create jobs in France and is lending its support to the agricultural sector. It is also playing its part in the energy transition, helping people to reduce their dependence on fossil fuels. With this in mind, Carrefour has decided to open up its stations to all other stakeholders in the transport sector which have vehicles running on biomethane.

Choosing vehicles running on biomethane is in line with Carrefour's ambitious transport policy, the aim of which is to bring about a 30% reduction in greenhouse gas emissions for each pallet transported by 2025 – compared with 2010 levels. To achieve this, the retailer is taking action on several fronts: it is moving its warehouses closer to its stores, adopting a responsible procurement policy and working closely alongside its main transport partners in the supply chain.

Click [here](#) for more information.

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## Biogas needs prices to drop to become competitive as vehicle fuel

While most people will identify electric vehicles as a sustainable form of transport, particularly when paired with renewable electricity generation, biogas also holds great potential to substantially reduce greenhouse gas emissions from the transport sector.

IRENA's newest technology brief highlights the process and technology status of biogas and provides insight to policy makers that want to include it in their plans for sustainable transport.

Biogas as vehicle fuel is starting to be more commonly used on the roads, and the largest producers of biogas as vehicle fuel in 2016 were Germany, Sweden, Switzerland, the UK and the US. Globally there's an estimated 500 plants that produce biogas and upgrade it to natural gas.

Their combined output is about 50 petajoules per year, which is an equivalent energy amount to around 1.3 billion litres of diesel. While the global liquid fuel consumption was higher than 3,000 billion litres as of 2014, 1.3 billion is a drop in the ocean — a drop that has a significant advantage over fossil fuels, as biogas produces substantially less greenhouse gas emissions.

Biogas produces between 60 and 80 per cent less greenhouse gas emissions than conventional gasoline, but ramping up its deployment and use is not without challenges, primarily cost. The cost of producing biogas is what really holds it back, and it is dependent on the feedstock used and the process to produce it and upgrade it. To make biogas competitive, its price needs to go down.

Typically, the price of producing biogas ranges between USD 0.22 and USD 0.39 per cubic meter of methane for manure-based biogas production, and USD 0.11 to USD 0.50 per cubic meter of methane for industrial waste-based biogas production.

IRENA anticipates that cost reductions in the range of 30 to 40 per cent appear to be realistic. The technology for biogas production and further purification and upgrading, is reliable and mature, and converting biomass to energy by anaerobic digestion can be done with a variety of feedstocks — enabling more price competitive options for producers.

Click [here](#) for more information.

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## Events

### European Funding for Bio-Based Industries

London, 3rd May 2017

## Innovate UK

### Knowledge Transfer Network

Brought to you by Knowledge Transfer Network (KTN), the H2020 UK National Contact Points, SusChem and Enterprise Europe Network, this free to attend event will give details about the 2017 call for proposals from the European Bio-based Industries Joint Undertaking.

This event is aimed at companies and research organisations that are interested in European Funding for Bio-based Industries (BBI) and who wish to work with European counterparts in collaborative research and innovation projects. The morning session will highlight information about the 2017 call for proposals from the BBI Joint Undertaking and the afternoon will be highly participative in support of consortia building and proposal development.

Due to limited spaces this will operate an Expression of Interest scheme: Innovate UK will confirm your space at the event within 10 working days from submission of your details.

Click [here](#) for more information.

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**FDI Expo**  
**London, 17<sup>th</sup> – 18<sup>th</sup> May 2017**



The Foreign Direct Investment (FDI) Expo and FDI Magnet invite you to join Going Global Live and FDI Expo at ExCeL in London, 17 & 18 May.

FDI Magnet's initiative "Invest in Bioeconomy" aims to promote sustainable and job-creating Foreign Direct Investment – globally.

Going Global Live is a leading event for companies looking to expand internationally. Once a company has proved a bioeconomy concept, global expansion is the way to scale. In the UK, many companies have developed technologies which can be applied with great advantage in other parts of the World: continental Europe, Americas, Asia or Africa.

FDI Expo runs alongside Going Global Live, gives countries and regions the opportunity to showcase their unique offerings in the bioeconomy: natural resources (agriculture, forestry, fisheries) agriculture and horticultural residues (such as cereal straws, manures, fruit pomace, and vegetable peel) as well as: universities and talents, prototyping labs and factories, transportation infrastructures, free zones and public incentives.

Click [here](#) for more information.

**13th International Conference on  
Renewable Resources and Biorefineries**  
**Wroclaw, 7<sup>th</sup> – 9<sup>th</sup> June 2017**



The 13th edition of the International Conference on Renewable Resources & Biorefineries will take place in Wroclaw, Poland from Wednesday June 7 until Friday June 9, 2017. Based on the previous RRB conferences, this conference is expected to welcome about 400 international participants from over 30 countries.

Delegates from university, industry, governmental and non-governmental organisations and venture capital providers will present their views on industrial biotechnology, sustainable (green) chemistry and agricultural policy related to the use of renewable raw materials for non-food applications and energy supply. The conference further aims at providing an overview of the scientific, technical, economic, environmental and social issues of renewable resources and biorefineries in order to give an impetus to the biobased economy and to present new developments in this area.

The conference will provide a forum for leading political, corporate, academic and financial people to discuss recent developments and set up collaborations.

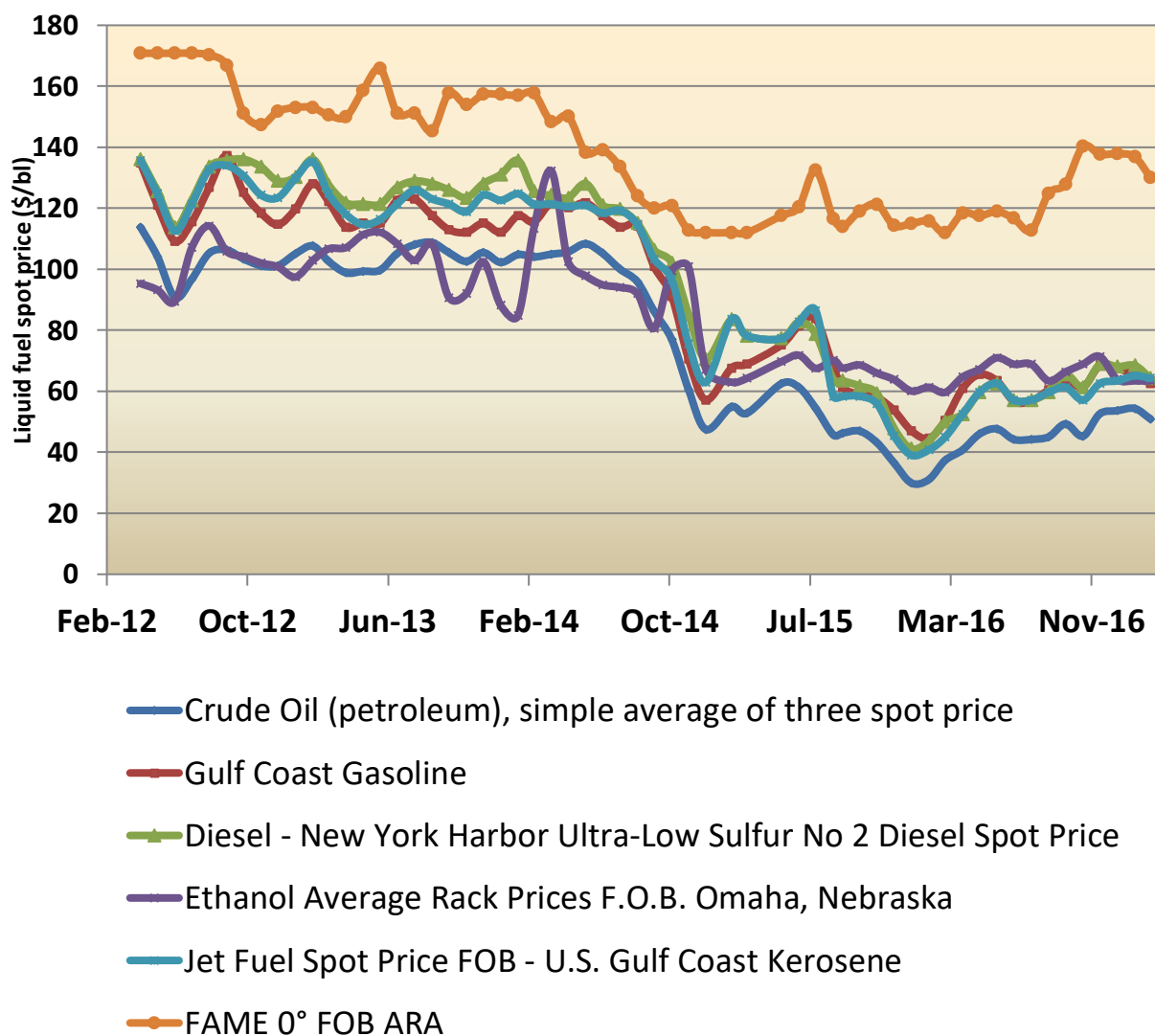
Click [here](#) for more information.

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# Price Information

**Historical spot prices of liquid fossil fuels and liquid biofuels. Five years' prices and up to March 2017 are given in \$ per barrel.**



*Prices of Crude oil, diesel, gasoline, and jet fuel are recorded from [www.indexmundi.com](http://www.indexmundi.com); Price of ethanol from [www.neo.ne.gov](http://www.neo.ne.gov); Biodiesel spot prices from <http://www.kingsman.com>*

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The Bioeconomy Consultants



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**NNFCC**

**Biocentre, York Science Park**

**Innovation Way**

**Heslington, York**

**YO10 5DG**

**Phone: +44 (0)1904 435182**

**Fax: +44 (0)1904 435345**

**Email: [enquiries@nnfcc.co.uk](mailto:enquiries@nnfcc.co.uk)**

**Web: [www.nnfcc.co.uk](http://www.nnfcc.co.uk)**

**Twitter: @NNFCC**